

TickIT

Executive Overview



Executive overview

1 TickIT objectives

The TickIT project started in 1991 with the principal aim of stimulating software system developers to think about:

- what quality really is in the context of the processes of software development,
- how quality may be achieved, and
- how quality management systems may be continuously improved.

A further major objective was to provide industry with a practical framework for the management of software development quality by developing more effective quality management system certification procedures. These involved:

- publishing guidance material to assist software organizations interpret the requirements of ISO 9001,
- training, selecting and registering auditors with IT experience and competence, and
- introducing rules for the accreditation of certification bodies practising in the software sector.

Although certification is a contractual requirement for software suppliers in certain market areas, it should be a by-product of the more fundamental aims of quality achievement and improvement and the delivery of customer satisfaction.

1.1 TickIT guidance

The TickIT Guide, now in its fifth issue, has been the mechanism for encapsulating good practice guidance, that is, the know-how and experience of a large number of quality professionals, and disseminating it throughout the world. TickIT guidance is available for any software organization to use and benefit from, regardless of whether they intend to proceed with certification.

This new edition of the Guide is being published at the same time as ISO 9001:2000. Clearly, there was a need to revise and realign previously published guidance material with the requirements of the new quality management standard, but the revision process has extended far beyond this.

ISO 9001:2000 requires organizations to set up their quality management systems to monitor, measure and continually improve their business processes. Definitions of software life cycle processes, published as ISO/IEC 12207, have been developed by ISO/IEC JTC-1 SC7. Part F of the new TickIT Guide is unique in marrying together the processes of the typical software developer, so well detailed in ISO/IEC 12207, with the requirements of ISO 9001:2000. The result is a set of recommended good practices on a process-by-process basis, complete with cross references to the quality standard.

Another area of major change has been brought about

by the uncertainty about the future of ISO 9000-3. Although work has now started on a replacement for this widely used guidance standard for software development, it will be some months before a new publication is available.

TickIT has responded by developing a new Part E of the Guide. This sets out BS EN ISO 9001:2000 requirements clause-by-clause, with interpretation guidance for software development organizations. The guidance material has been developed partly from the content of BS EN ISO 9000-3:1997, partly from material that was already in the Issue 4.0 TickIT Guide and from numerous additional comments and suggested improvements. Also, each clause is referenced to the processes listed in Part F.

Process improvement

A final area of emphasis is process improvement, in sympathy with the new requirements of ISO 9001:2000 for continual improvement. This is a vital aspect of quality management for all organizations – focusing effort where most returns are likely and tracking business needs and/or market opportunities.

TickIT is not prescriptive about the improvement method to be used, as organizations need to adopt the improvement processes that best suit their business objectives. Four of the appendices are devoted to this topic, and include case studies showing how major IT companies have adopted three of the most widely used process improvement methods – the EFQM Excellence Model, ISO/IEC TR 15504 (SPICE), and CMMSM.

This new Guide contains, therefore, the definitive guidance required by all those involved in TickIT certification procedures, as well as a wealth of new material and information for all software practitioners to assimilate.

1.2 TickIT certification

With regard to certification, the objectives of TickIT are to:

- improve market confidence in third party quality management system certification through accredited certification bodies for the software sector,
- improve professional practice amongst quality management system auditors in the software sector,
- publish authoritative guidance material for all stakeholders.

TickIT certification procedures relate directly to ISO 9001:2000 and to the guidance in this publication. More detailed information about the certification process is given in Part A.

As at August 2000, approximately 1,400 ISO 9001/TickIT certificates had been issued worldwide by the 12 certification bodies accredited by the United Kingdom Accreditation Service (UKAS) and the Swedish

Board for Accreditation and Conformity Assessment (SWEDAC). The DISC TickIT Office maintains lists of the accredited certification bodies and certificated organizations, and this information is readily available at the TickIT web site (Internet: www.tickit.org). All organizations certified as having quality management systems conformant to ISO 9001 under the TickIT procedures are entitled to a certificate bearing the logo of their certification body, the logo of the accreditation agency and the TickIT logo. Control is maintained through the copyrighting of the TickIT logo and the restriction of its use by licensing.

Companies already certificated to ISO 9001 under TickIT are in over 50 different countries. These include every country in the European Union, USA, Canada, Mexico, Brazil, and Australia and many countries in Asia, including China, India, Japan, South Korea and Taiwan.

1.3 Auditor training and registration

To ensure that auditors working in this sector are competent in software development, and thus capable of applying the requirements of ISO 9001 in the software context, they are required to go through a training course registered by the IQA International Register of Certificated Auditors (IRCA). The courses are based on a common syllabus approved by IRCA and the TickIT Industry Committee, the committee that determines overall policy issues. Following training, applicant auditors go before an interview panel comprising Reviewing Officers nominated by IRCA and the British Computer Society and, if successful, achieve approved TickIT auditor status and IRCA registration.

By this means, the software industry is provided with competent auditors who understand industry needs and possess the skills necessary to interface with senior software business managers.

2 Quality management system standards

2.1 The key requirements document

The key requirements document used within TickIT is ISO 9001:2000. This is the generic source of requirements for quality assurance in design, development, production, installation and servicing as well as the standard against which quality management systems for software are assessed.

2.2 Important changes to ISO 9001

The new series

Major changes have been introduced into the overall structure and content of the revised ISO 9000 series of quality management standards. The series now comprises just four documents:

- ISO 9000:2000 Quality Management Systems – Fundamentals and vocabulary,
- ISO 9001:2000 Quality Management Systems – Requirements,
- ISO 9004: 2000 Quality Management Systems – Guidelines for performance improvement,
- ISO 19011 Quality Management Systems – Guidelines on Quality and Environmental Auditing. This, when issued, will replace ISO 10011.

ISO 9000:2000 explains the principles underlying the changes to ISO 9001 and defines vocabulary. In some instances commonly-used terms have been given a new emphasis. It is wise, therefore, to read ISO 9000:2000 before ISO 9001:2000.

New requirements

All readers should be aware of the following major changes that have been made to the key requirements document, ISO 9001:2000.

The greatest change is the new emphasis on processes and good process management. This may be quite new to some organizations currently holding ISO 9001 certificates. The Issue 4.0 TickIT Guide introduced the concept of developing a quality management system based on software development processes. This guidance has been updated and expanded and may now be found in Part F.

ISO 9001:2000 also places significantly more emphasis on the commitment and involvement of top management in establishing quality policy and objectives, ensuring that customer needs are satisfied, carrying out quality management system reviews including reviews of improvement activities, and providing the necessary resources to deliver quality. This topic is discussed from different perspectives in Parts A, C, E, F and the Appendices.

The 'reduced scope' standards ISO 9002 and ISO 9003 have been withdrawn. Instead, ISO 9001:2000 should now be tailored in cases of reduced scope by removing one or more of the clauses which relate to Product Realization. This is permissible provided the requirements that have been removed have no impact on the quality of the product or service being offered. For example, ISO 9001:2000 without clause 7.3 equates to ISO 9002:1994. Software developers are usually involved in most aspects of Product Realization, but one example of tailoring that may be appropriate for some information technology organizations is the removal of clause 7.5.3, which covers requirements for the care of customer property. Guidance relating to the clauses covering Product Realization may be found in Part E.

A new requirement of ISO 9001:2000 is for organizations to implement actions necessary for achieving continual improvement of processes and the quality

management system. Whereas improvement was implied as good practice in the 1994 edition of the standard, it is now compulsory. Of particular relevance are the new 'Measurement' process and the updated and expanded 'Improvement' process which are described in Part F: these are supported by additional information in the Appendices.

2.3 ISO 9000-3

The revision process for ISO 9000-3 started in October 2000 and the revised standard, perhaps with a different number, is expected to become available in 2001/2. Part E of this edition of the TickIT Guide contains an updated extract of the guidance for software develop-

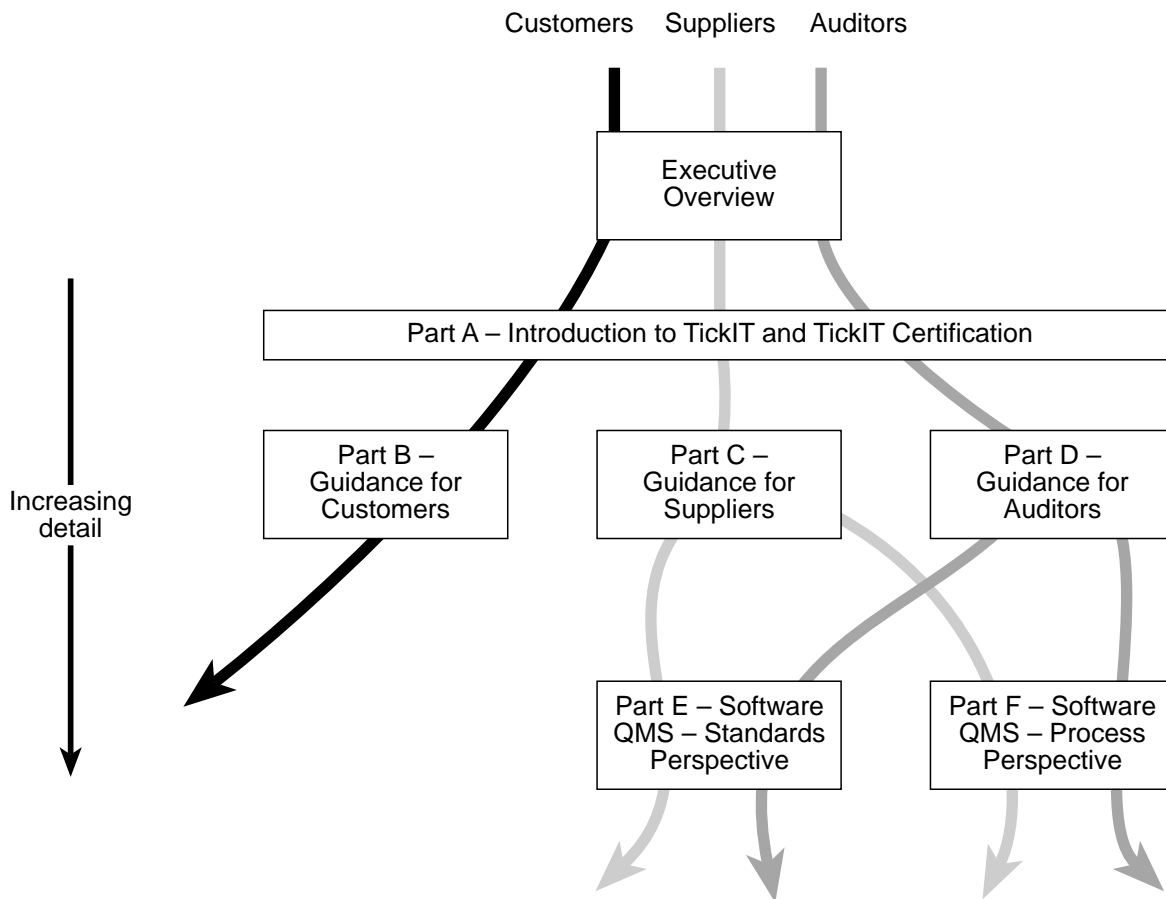
ment published in BS EN ISO 9000-3:1997. Part E should therefore be used as a substitute for ISO 9000-3 until the standard has been revised and published.

2.4 References to ISO 9001

Where references are made to ISO 9001 in the Guide, a general use of the Standard is implied, for example, ISO 9001 certification, which has been practised since the Standard was first issued.

Where specific requirements of the new standard are implied, ISO 9001:2000 is stated in full.

BS EN ISO 9001 is used in the context of Part E which contains extracts from this, the British version of the Standard.



Overview Diagram - Ways of Using the Guide

Notes: Those already familiar with TickIT may wish to skip through Part A

Parts E and F are directed at suppliers and auditors

Appendices 1-4, not shown above, all relate to Process Improvement and are of general interest

3 TickIT Guide contents

The TickIT Guide contains the official guidance material for TickIT. It is directed at a wide audience: senior managers and operational staff of software suppliers and in-house development teams, purchasers and users of software based systems, certification bodies and accreditation authorities, third party and internal auditors, auditor training course providers and IT consultants.

Part A: Introduction to TickIT and the Certification Process

This presents general information about the operation of TickIT and how it relates to other quality initiatives such as Process Improvement.

Part B: Guidance for Customers

This describes the issues relating to quality management system certification in the software field from the viewpoint of the customer who is initiating a development project, and explains how the customer can contribute to the quality of the delivered products and services.

Part C: Guidance for Suppliers

This presents information and guidance to software and software service providing organizations, including in-house developers, on the construction of their quality management systems using the TickIT procedures. This part also indicates how organizations can assess and improve the effectiveness of their quality management systems.

Part D: Guidance for Auditors

This gives guidance to auditors on the conduct of assessments using the TickIT procedures.

Part E: Software Quality Management System Requirements – Standards Perspective

This contains guidance to help organizations producing software products and providing software-related services interpret the requirements of BS EN ISO 9001:2000. It follows the clause sequence of the Standard.

Part F: Software Quality Management System Requirements – Process Perspective

This identifies and elaborates upon the good practice required to provide effective and continuous control of a software quality management system. It is organized around the basic processes required for software development, maintenance and support and follows the structure set out in ISO/IEC 12207:1995.

Appendix 1: Management and Assessment of IT Processes

This presents an overview of the methods by which self-assessments may be made.

Appendix 2: Case study: Using the EFQM Excellence Model

Appendix 3: Case Study: ISO/IEC TR 15504 – Compatible Process Assessments

Appendix 4: Case study: Software Process Improvement The CMMSM Way

Appendix 5: Standards References

Glossary of terms

Keyword Index